Utah

5% Report of Safety Needs
Fiscal Year 2009 Annual Report

Utah Department of Transportation
Division of Traffic and Safety

I. BACKGROUND

Section 1401 of SAFETEA-LU amended Section 148 of Title 23 USC to create the new core Highway Safety Improvement Program (HSIP). The purpose of the HSIP is to reduce traffic fatalities and serious injuries on public roads. As part of the HSIP, States are required to submit an annual report describing five percent of their highway locations exhibiting the most severe safety needs [Section 148(c)(1)(D)]. The intent of this provision is to raise public awareness of highway safety needs and challenges in the States.

At the state level, Utah has adopted a Zero Fatalities goal (ut.zerofatalities.com). Reaching this lofty goal, while difficult, is possible if everyone involved in traffic safety participates and contributes. Educating and partnering with the driving public is an essential step for the engineering community. This report is one avenue available for UDOT to strengthen that partnering effort.

II. DEVELOPMENT METHODOLOGY FOR THE STRATEGIC ACTION PLANS

Emphasis areas and strategies in the Utah Comprehensive Safety Plan (UCSP) were identified through an analysis of Utah crash data. This meets a requirement in SAFETEA-LU for crash data to be the basis for prioritizing traffic safety needs in the state. The initial analysis was on the statewide, aggregate level so that problem crash types and trends could be identified. Once the emphasis areas were established, the next step was to determine where the problems were occurring within the state in each category. This analysis was performed using the High Proportion Testing Method, a standard industry statistical method.

A. *HIGH PROPORTION TESTING METHOD*

A statistical review of Utah crash data was performed to identify priority road segments in each UCSP emphasis area. The review used the High Proportion Testing method to determine the locations. Generally, for each highway segment, the probability that the proportion of a specific crash type was higher than the average proportion for roads belonging to the same functional class (e.g. two-lane highways) was computed based on the binomial test. If the probability was less than a certain significance level (i.e. 5%), the site was flagged and the number of specific crashes out of the total number of crashes at that site was reported. This screening method identifies highway segments that have a high proportion of a target crash type in relation to all crashes within a functional class, for serious and fatal injury crashes.

The High Proportion Testing Method is an effective way to evaluate crash history when sufficient traffic volume data is not available to facilitate the use of crash rates. The Department's current effort to improve our data collection, storage, and access practices will improve this situation, and should allow the use of safety performance functions for future analysis and prioritization. An internal Utah Department of Transportation (UDOT) data warehouse that includes roadway data, roadway features, and crash data is in development.

B. *LOCATION REFERENCING COVERAGE BY JURISDICTION*

Our current crash analysis program requires that a route be location-referenced in order for crashes to be located along the route. Currently, there is location-referencing for state and federal aid routes only. Table 1 summarizes current levels of jurisdictional location referencing coverage:

Table 1 – Statewide Crash Location Referencing Coverage

Jurisdiction	Mileage	% Mileage	Location Referencing Mileage	Location Referencing Coverage %
State	5,830	13.2 %	5,830	100.0 %
Local & Other (federal aid)	7,985	18.1 %	7,985	100.0 %
Local & Other (non-federal aid)	30,412	68.8 %	0	0.0 %
Statewide	**44,227**	**100.0 %**	**13,815**	**31.2 %**

Notes: (1) Mileage totals from the UDOT 2008 Annual Statistical Summary
http://www.udot.utah.gov/main/f?p=100:pg:0::::T,V:1023
(2) "Other" routes include Forest Service, Parks Service, and BLM roads.

UDOT plans to have a 95% crash location referencing coverage statewide by Summer 2010. Table 2 illustrates the jurisdictions where these crashes occurred in 2007, along with the numbers that were location-referenced and those that were not. In 2007, 86% of crashes were location-referenced.

Table 2 – Location-Referenced Crash Statistics for 2007

Jurisdiction	# of Crashes	Location-Referenced Crashes	Crash Referencing Coverage %
State	38,585	38,585	100.0 %
Local & Other (federal aid)	14,162	14,162	100.0 %
Local & Other (non-federal aid)	8,497	0	0.0 %
Statewide	**61,244**	**52,747**	**86.1 %**

III. PRIORITIZATION PROCESS

The network screening described in Section II resulted in a list of roadway segments in each functional classification where the high proportion method indicated that Roadway Departure crashes were overrepresented. Roadway segmentation comes from the UDOT Roads File and is determined by the characteristics of the roadway. Each roadway segment has the same characteristics: traffic volume, functional classification, county boundary, urban/rural classification, etc. The segments vary in length from hundredths of a mile to several miles. The screening evaluated each segment individually, which generated a list of non-continuous portions of routes, each with a calculated probability for the number of Roadway Departure crashes that occurred. The lists were then combined and sorted by route and milepoint to align the segments so continuous portions of routes could be identified.

IV. 5% OF LOCATIONS EXHIBITING THE MOST SEVERE SAFETY NEEDS

The established requirement for this report is for states to report the "five percent of locations exhibiting the most severe safety needs." States have been given wide latitude to determine what that means. The emphasis areas in the Utah Comprehensive Safety Plan lend themselves to a segmental analysis, which was selected as the method used for the Utah report. The statistical screening and subsequent sorting resulted in the following priority road mileages by emphasis area:

- Roadway Departure Crashes: 1,064 miles
- Safety Restraint Use: 241 miles
- Impaired Driving: 379 miles
- Aggressive Driving: 365 miles
- Drowsy Driving: 162 miles

The sum of the above reported mileage is 2,211 (which includes some double counting). The Strategic Action Plan (SAP) for Roadway Departure crashes has been developed in sufficient detail to identify individual locations as the "five percent most severe."

A. *EMPHASIS AREA: ROADWAY DEPARTURE CRASHES*

Roadway Departure crashes account for approximately half of the fatalities on Utah's highways. Table 3 lists the roadway segments that the screening process highlighted as the largest priorities for the Roadway Departure emphasis area.

Table 3 – Priority Roadway Segments for Roadway Departure Emphasis Area

Route	Begin MP	End MP	Mileage
6	0	88	88
6	174	216	42
6	248	300	52
12	16	58	42
12	93	123	30
14	7	41	34
15	80	120	40
15	188	223	35
20	0	21	21
21	57	90	33
30	99	107	8
30	120	132	12
40	20	50	30
40	115	140	25
50	132	149	17
59	0	17	17
70	17	48	31
70	94	159	65
70	193	215	22
80	0	98	98
80	168	197	29
89	0	103	103
91	2	19	17
130	19	36	17
138	12	21	9
143	4	31	27
189	8	26	18
191	87	111	24
191	131	157	26
191	157	177	20
262	0	23	23
262	31	40	9
		Emphasis area total:	**1,064**

The locations that comprise the most severe of the five percent of Roadway Departure crashes are all on interstate routes. This is due to high speeds, high traffic volumes, high truck volumes, and incidences of Drowsy Driving that occur on Utah's mostly-rural interstate system. These most severe roadway segments are shown in Table 4.

Table 4 – 5% Most Severe Safety Needs for Roadway Departure Crashes

Rte.	Begin	End	Miles	Potential Remedy	Est. Cost	Comments
6	MP 174 (Spanish Fork)	MP 216 (Scofield)	42	Rumble Strips; Signing; Barrier; Education	$500,000	Several widening projects with barrier & rumble strips are complete or underway
15	MP 188 (Scipio)	MP 223 (Nephi)	35	Rumble Strips; Signing; Education	$300,000	Safety Assessment performed FY 07
15	MP 80 (Parowan)	MP 120 (Beaver)	40	Rumble Strips; Cable Barrier; Signing; Education	$500,000	Safety Assessment performed & cable barrier to be constructed MP 115 to 119
40	MP 20 (Heber)	MP 50 (Straw-berry)	30	Rumble Strips; Signing; Education	$300,000	Safety Assessment performed and rumble strips were installed FY 08
70	MP 17 (Belknap)	MP 48 (Rich-field)	31	Rumble Strips; Signing; Education	$100,000	Rumble Strips & Signs installed FY 06
70	MP 94 (SR 10)	MP 159 (Green River)	65	Rumble Strips; Signing; Education	$500,000	Rumble Strips & Signs installed FY 06
70	MP 193	MP 215 (Cisco)	22	Rumble Strips; Signing; Education	$100,000	Rumble Strips & Signing installed FY 06
80	MP 168 (Echo)	MP 196 (WY stateline)	28	Rumble Strips; Signing; Education	$500,000	Safety Assessment performed FY 07
		Total	**293**		**$2,800,000**	
		Emphasis Area Total	**1,064**			
		% Reported	**28%**			

There are no significant impediments other than limited resources affecting the implementation of these projects. The segments where mitigation measures have been installed will be studied and included in the annual HSIP report.

In addition to the segments listed in Tables 2 and 3, safety assessments have been performed on about 500 miles of other highway segments around the State that were identified using the high proportion screening method. These assessments identify safety deficiencies and make recommendations to remedy those deficiencies.

B. *EMPHASIS AREA: SAFETY RESTRAINT USE*

Table 5 shows the complete listing of priority segments identified in the screening:

Table 5 – Priority Roadway Segments for Safety Restraint Use Emphasis Area

Route	Begin MP	End MP	Mileage	Potential Remedy (general)	Estimated Cost	Comments
18	2	4	2	Enforcement campaigns; Education campaigns.	$500,000	"Click it or Ticket" program has been successful. Since 1999, safety restraint use has increased nationally from 67% to 87%.
34	0	2	2			
70	130	228	98			
80	0	100	100			
89	284	312	28			
91	23	29	6			
171	3	8	5			
		Total	**241**		**$500,000**	
Emphasis Area Total			**241**			
% Reported			**100%**			

Utah's law enforcement community joins with thousands of other state and local agencies across the nation to implement an aggressive national *Click It or Ticket* media and enforcement campaign to save lives by cracking down on safety belt law violators. Utah first began participating in the campaign in 2003. Utah places special emphasis on night-time seat belt enforcement. A total of 52 law enforcement agencies across the state participated in the high visibility enforcement during May 18-30, 2009. Officers issued a total of 4,619 seat belt citations and 328 child restraint citations.

One significant impediment to implementation of Safety Restraint Use mitigation measures is the non-existence of a primary seatbelt law in Utah. Currently, these violations are considered secondary offences, punishable only when the driver is pulled over for another infraction.

C. *EMPHASIS AREA: IMPAIRED DRIVING*

Table 6 shows the complete listing of priority segments identified in the screening.

Table 6 – Priority Roadway Segments for Impaired Driving Emphasis Area

Route	Begin MP	End MP	Mileage	Potential Remedy (general)	Estimated Cost	Comments
15	0	7	7	Enforcement campaigns; Education campaigns; Signing.	$500,000	The Utah Highway Safety Office continues to support programs to reduce impaired driving. The EASY program continues to target underage drinking and has shown to be successful.
15	82	95	13			
15	146	166	20			
15	187	223	36			
15	269	284	15			
70	25	57	32			
70	122	232	110			
80	0	100	100			
91	17	25	8			
191	119	157	38			
Total			**379**		**$500,000**	
Emphasis Area Total			**379**			
% Reported			**100%**			

The Eliminating Alcohol Sales to Youth program (EASY) limits access to alcohol at grocery and convenience stores and conducts statewide media and education campaigns to alert pre-teens, teens, parents, and communities to the dangers alcohol presents to developing teen brains and the increased risk of addiction from early alcohol use.

D. *EMPHASIS AREA: AGGRESSIVE DRIVING*

Table 7 shows the complete listing of priority segments identified in the screening.

Like most other emphasis areas, the most significant impediment to implementing the Aggressive Driving SAP is limited law enforcement resources available to apply to new enforcement campaigns. A legislative restriction on electronic speed enforcement in Utah also limits available mitigation measures for speeding and red light running.

Table 7 – Priority Roadway Segments for Aggressive Driving Emphasis Area

Route	Begin MP	End MP	Mileage	Potential Remedy (general)	Estimated Cost	Comments
15	286	360	74	Enforcement campaigns; Education campaigns; Signing.	$500,000	UDOT has partnered with the Utah Department of Public Safety to develop a Speed Management Program. An example of the Speed Management Program was an effort in Tooele County where the Utah Highway Patrol and three other local law enforcement agencies completed a pilot program to enforce the speed limits on all roads in the county. Tooele County was selected because data showed it has one of the highest incidents of speed related fatalities and serious injuries in the state.
18	1	4	3			
34	0	2	2			
39	4	14	10			
40	0	19	19			
48	9	12	3			
70	6	18	12			
70	63	86	23			
71	10	15	5			
73	39	42	3			
75	0	2	2			
77	4	9	5			
80	111	166	55			
80	187	197	10			
84	91	96	5			
84	106	113	7			
89	312	321	9			
89	345	356	11			
91	10	17	7			
108	1	8	7			
154	4	24	20			
173	5	10	5			
180	0	2	2			
189	1	19	18			
190	2	15	13			
201	9	18	9			
203	0	6	6			
210	3	12	9			
215	5	11	6			
266	0	5	5			
Total			**365**		**$500,000**	
Emphasis Area Total			**365**			
% Reported			**100%**			

E. *EMPHASIS AREA: DROWSY DRIVING*

The drowsy driving emphasis was added in 2007. Drowsy driving continues to be a significant cause of severe crashes in Utah. Table 8 shows priority roadway segments for drowsy driving based on crash data analyses.

Table 8 – Priority Roadway Segments for Drowsy Driving Emphasis Area

Route	Begin	End	Mileage	Potential Remedy	Estimated Cost
15	MP 0 (Arizona SL)	MP 5 (St. George)	5	Shoulder Rumble Strips; Median Cable Barrier	$650,000
15	MP 340 (I-84)	MP 345 (North Ogden)	5	Shoulder Rumble Strips; Median Cable Barrier	$650,000
70	MP 20 (Indian Museum)	MP 25 (Joseph)	5	Median Cable Barrier; Signing	$600,000
70	MP 95 (Emery Co.)	MP 100	5	Median Cable Barrier; Signing	$600,000
80	MP 5 (Nevada)	MP 75 (Stansbury Mountains)	70	Rumble Strips; Median Cable Barrier; Signing; Education	$4,000,000
Total			**90**		**$6,500,000**
Emphasis Area Total			**162**		
% Reported			**56%**		

These potential remedies are being planned and prioritized. Drowsy Driving and Road Departure crashes are emphasis areas that are closely related and will continue to be a priority in UDOT's safety program efforts. In addition to engineering improvements, improvements in driver behavior will be a critical mitigation measure. Educating drivers of the dangers of drowsy driving is an important task in these efforts.

One impediment to implementation of Drowsy Driving mitigation measures is that crash contributing factors are often underreported. This makes it difficult to know if fatigue was a factor.

V. CONTACT INFORMATION

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